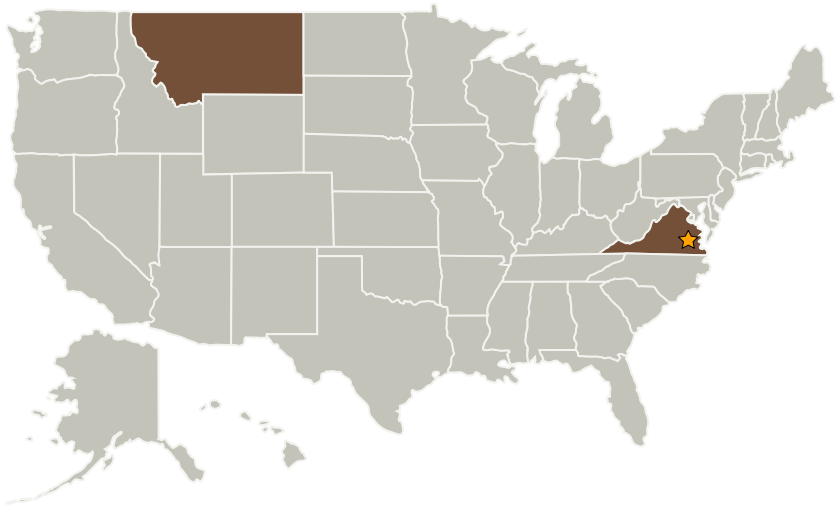
Waveguide Phase Modulator for Integrated Planar Lightwave Circuits in KTP, Phase I

Completed Technology Project (2007 - 2007)

Project Introduction

This SBIR Phase I effort proposes the development of a potassium titanyl phosphate (KTP) waveguide phase modulator for future integration into a Planar Lightwave Circuit (PLC) used for high spectral resolution aerosol and cloud lidar applications. The PLC is a monolithic substrate that integrates key optical and electro-optical components. These individual components are currently used to lock a seed laser and high power host laser to an iodine absorption line. This technology is important for lidar systems requiring high frequency stability and accuracy. The PLC concept advances NASA's lidar systems due to its compact, efficient, and reliable design, thus enabling use on small aircraft and satellites. The key objective in this SBIR proposal is to establish the feasibility of fabricating a low-voltage, 250MHz waveguide phase modulator in KTP that can support moderate optical powers at 532nm. A baseline PLC design will be presented that will incorporate the phase modulator. The focus of the Phase II effort will be to fabricate a PLC with integrated phase modulator based on this Phase I study.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
ADVR, Inc.	Supporting Organization	Industry	Bozeman, Montana

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Montana	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.4 Decompression Sickness Mitigation